

Serial No.: 10/617,363
Amdt. Dated: October 23, 2007
Reply to Office Action dated April 23,
2007

45047

Amendments to the Drawings

By the present, amendment, FIGS. 3 and 5a have been amended. Replacement sheets for FIGS. 3 and 5a are appended, along with annotated drawing sheets showing the corrections made to the drawings herein.

REMARKS

Claims 1-42 are pending. By the present Amendment, claims 1, 2, 4-6, 8-10, 12, 13, 16-28, and 30-37 have been amended, and claims 7, 14, 15, 29 and 38-41 have been canceled.

Claims 1, 6, 8, 25, 28, 34 and 37 are independent.

Claim Rejections – 35 U.S.C. § 112, second paragraph

Claim 39 has been canceled.

Claim Rejections – 35 U.S.C. § 103(a)

1. In the Office Action, claims 1, 3-5 and 11 are rejected under 35 U.S.C §103(a) as being obvious over U.S. Published Patent Application No. 2005/0220180, to Barlev et al (hereinafter “Barlev et al”) in view of the cited paper to Sklower et al (hereinafter “Sklower et al”).

Applicants respectfully submit that Barlev et al does not teach a high speed data interface that inverse multiplexes a DS3 stream into a few parallel data streams, nor a framer for generating a stream of packets from each of the parallel data streams for transmission over respective twisted pair conductors each have a data rate of 13 Mbps. First, as stated in paragraph [0148] of Barlev et al, a high speed access system (HSAS) as shown in Fig. 7 of Barlev et al divides a higher rate stream into frames that are then forwarded to data lines 288 to modems 278. By contrast, the present invention performs the recited framing on the parallel data streams inverse multiplexed from the high speed or DS3 data stream, which is in contrast with framing of the higher rate stream as in Barlev et al.

Second, Barlev et al does not suggest the claimed invention since Barlev et al is directed to a completely different system. In other words, Barlev et al fails to support an obviousness rejection since the stated objectives therein reinforce an interpretation of the reference to not teach the claimed invention. As stated in paragraphs [0031] and [0032] of Barlev et al, the stated

objective of the HSAS disclosed therein is to transport a high speed data stream over a plurality of relatively low bandwidth twisted copper pairs over a “long range communication channel” that is exemplified in Table 1 of Barlev et al to be not less than 6,000 feet. The claimed invention, on the other hand, transports a high speed data stream such as DS3 over a few copper pairs operating at very high bandwidth (e.g., 13 Mbps) which is useful over a short range (e.g., a maximum distance of 2,300 feet) or, when used in a back-to-back configuration the implements a loopback advantage of the present invention (e.g., as exemplified in paragraph [0021] and Fig. 2 or in paragraph [0038] and Fig. 5b of the application) in two or more 2,300 feet segments. The interpretation of the HSAS described in Barlev et al to not teach the claimed invention is further evident from paragraph [0032] of Barlev et al. Paragraph [0032] of Barlev et al states that the HSAS disclosed therein and relied on to purportedly teach the claimed invention is only for a link from the CO to the node and **not** a link over the “*relatively short distance* ‘drop segment,’ i.e., from the node to the user.” xDSL and not the disclosed HSAS is used for the drop segment.

Finally, Sklower et al does not cure the above-noted deficiencies of Barlev et al. The Examiner admits that Barlev et al fails to disclose the generated stream of packets recited in claim 1 where each packet has a packet index number. Sklower et al relates to PPP multilink (MP) protocol. The layout of the MP fragments or “packets” including a sequence number in the MP described in pages 7 and 8 of Sklower et al are purported to teach the recited packet index number. The MP refers to a data protocol for the high speed data stream. Thus, the MP described in Sklower et al does not teach or suggest framing parallel data streams inversely multiplexed from a high speed data stream and generating a stream of packets for each one of these parallel data streams, nor providing the packets in the parallel data streams with packet index or packet stream numbers, as recited in claim 1.

Regarding dependent claim 4 as amended herein, neither of Barlev et al and Sklower et al discloses or suggests inverse multiplexing a DS3 data stream to parallel streams and framing the parallel data streams as recited in claim 1 and therefore cannot disclose or suggest sending bits of the DS3 stream to the parallel streams in a round robin manner.

Regarding dependent claim 5, neither of Barlev et al and Sklower et al discloses or suggests use of stuffing bits to allow varying the number of bits in the packets of a parallel stream when inverse multiplexing a DS3 data stream to the parallel streams.

In view of the foregoing, Applicants respectfully request withdrawal of the 35 U.S.C §103(a) rejection of claims 1, 3-5 and 11.

2. Claim 2 is rejected under 35 U.S.C. § 103(a) as unpatentable over Barlev et al in view of Sklower et al and further in view of U.S. Patent No. 5,608,733, to Vallee et al.

Claim 2 has been amended to recite additional aspects of packets. The Examiner admits that Barlev et al fails to teach a framer adapted to generate a stream of packets with packets being provided a stream number as recited in independent claim 1. Vallee et al does not overcome the deficiencies of Barlev et al and Sklower et al stated above with respect to independent claim 1. Vallee et al discloses ATM inverse multiplexing and uses sequence numbers for the ATM cells sent over transmission links in round robin order. Vallee et al, however, does not disclose any of these transmission links being a twisted pair conductor carrying approximately 13 Mbps including overhead, nor does it disclose the framing or packet index number incrementation in connection with placement of a DS3 stream on only four twisted pair conductors carrying a relatively high bandwidth such as 11 - 13 Mbps. In view of the foregoing, withdrawal of the rejection of claim 2 under 35 U.S.C §103(a) is respectfully requested.

Further, with respect to claim 4, Vallee et al only discloses putting ATM cells on links in round robin fashion but not bits of a DS3 stream on respective ones of parallel data streams as claimed.

3. In the Office Action, claims 25-27, 33-36 and 42 are rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Vallee et al and further in view of Sklower et al.

Independent claims 25 and 34 are amended herein in a manner similar to independent claim 1. Thus, the remarks regarding the nonobviousness of claim 1 also apply to claim 34, as well as to claim 25 except in a converse manner applicable to a receiver as opposed to a transmitter. Similarly, claims 26 and 27 and claims 35 and 36 are amended, respectively, herein in a manner similar to dependent claims 4 and 5 and likewise are patentable over the cited art for the reasons stated above. Claim 33 has been amended and is discussed below in connection with the rejection of claims 30-32.

Accordingly, Applicants respectfully request withdrawal of this basis for rejecting claims 25-27, 33-36 and 42 under 35 U.S.C §103(a).

4. Claims 6 and 7 are is rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Sklower et al, and further in view of U.S. Patent No. 6,657,953, to Hiramoto et al (hereinafter referred to as "Hiramoto et al").

Claim 6 has been amended to include the limitations of original claim 6 and dependent claim 7.

Neither of Barlev et al and Sklower et al discloses or suggests inverse multiplexing a high speed data stream to parallel streams and then framing the parallel data streams as recited in claim 1 for reasons stated above and therefore cannot disclose or suggest the recitations of claims 6 and 7.

Hiramoto et al is relied on to purportedly teach loopback control as recited in amended claim 6. Claim 6 recites passing through a first received loopback code and entering a loopback mode if a selected consecutive loopback code is received without an intervening loop down code.

Hiramoto et al merely discloses conventional loopback of a signal whereby the signal is echoed back to a transmitting device if the communication path is good and whereby loopback control signals are used to set up and then clear a loopback control state. There is, however, no "pass through" and then entry of loopback mode upon receipt of a selected consecutive loopback

code without an intervening loop down code as recited in claim 6. An advantage of the claimed invention is its operation to perform loopbacks in tandem arrangements whereby the **farthest** to nearest tandem devices are successively tested in response to respective ones of **first** to subsequent, consecutive loopback codes, as exemplified in paragraph [0038] and Fig. 5b.

As explained more fully in the Gewin et al patent used to reject claims 8-10, conventional loopback systems require that testing is “only performed with the line out of service,” and use identical tests that are performed on only one line segment at a time beginning with the **nearest** device (see column 2, line 49 through column 3, line 32 of Gewin et al), and therefore are in complete contradistinction with the claimed invention recited in claim 6. If testing of the nearest device is successful, then that segment is reset to be back in service so that the next device can be tested. As stated on lines 24-32 in column 3 of Gewin et al, devices must be activated for testing and then reset thereafter using loopback and reset codes, respectively, to enable the testing of the next line segment. By contrast, the system recited in claim 6, allows a device to pass a code to the next device and enter a loopback mode upon receiving a subsequent loopback code “without an intervening loop down code” or reset code. Thus, unlike a conventional loopback system as disclosed in Hiramoto et al and Gewin et al, the recited invention can test the farthest device first since the intervening devices can perform “pass through” of a code as claimed. This allows plural line segments to be tested at once unlike the conventional loopback system described in Gewin et al and discussed herein.

Applicants therefore respectfully request withdrawal of this basis for rejecting claims 6 and 7 under 35 U.S.C §103(a).

5. Claims 8-10 are rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Sklower et al and further in view of U.S. Patent No. 5,060,226, to Gewin et al (hereinafter “Gewin et al”).

In the Office Action, the dip switches described in Gewin et al for configuring loopback addressing are relied on to teach configuring a device to be a repeater or non-repeater. This is incorrect. A repeater is exemplified in the application in Figs. 1 and 5a and paragraph [0033]

(e.g., the DS3 LIU 102 in each of two units 100 are connected together to pass DS3 therebetween and provide TP connections upstream and downstream of the repeater). No loopback devices disclosed in Gewin et al are configured as recited in amended claim 8. Further, none of the cited references disclose a switch for configuring an apparatus as recited in claim 8 as a repeater having a high speed data interface connected to that of another apparatus or as a stand-alone unit operating as a non-repeater.

Applicants therefore respectfully request withdrawal of this basis for rejecting claims 8-10 under 35 U.S.C. §103(a).

6. Claims 12 and 13 are rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Sklower et al and further in view of other cited papers hereinafter referred to as “ADC Telecommunications A” and “ADC Telecommunications C”.

Claims 12 and 13 have been amended to depend from amended claim 8, and the cited papers “ADC Telecommunications A” and “ADC Telecommunications C” do not cure the deficiencies of the references cited against claim 8 for reasons noted above. Applicants therefore request withdrawal of this basis for rejecting claims 12 and 13 under 35 U.S.C §103(a).

7. Claim 14 is rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Sklower et al, Hiramoto et al and further in view of other cited papers hereinafter referred to as “ADC Telecommunications A” and “ADC Telecommunications B”.

Also, claims 15 and 16 are rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Sklower et al, Hiramoto et al and further in view of other cited papers hereinafter referred to as “ADC Telecommunications A” and “ADC Telecommunications B” and further in view of. U.S. Patent No. 7,058,011, to Stearns et al (hereinafter “Stearns et al”).

Claim 16 has been amended to include the limitations of claims 14, 15 and amended claim 8, and Stearns et al, Hiramoto et al and the cited papers “ADC Telecommunications A”

and “ADC Telecommunications B” do not cure the deficiencies of the references cited against claim 8 for reasons noted above.

Accordingly, Applicants request withdrawal of this basis for rejecting claims 15 and 16 under 35 U.S.C §103(a).

8. Claims 17-24 are rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Sklower et al, and further in view of U.S. Patent No. 6,275,510, to Koenig et al (hereinafter “Keonig et al”) .

Claims 17-23 have been amended to include the limitations of amended claim 8, and Koenig et al does not cure the deficiencies of the references cited against claim 8 for reasons noted above. Claim 24 depends from claim 23. Accordingly, Applicants request withdrawal of this basis for rejecting claims 17-24 under 35 U.S.C §103(a).

9. Claims 28, 29, 37 and 38 are rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Vallee et al and Sklower et al, and further in view of Hiramoto et al.

Claim 28 has been amended to include the limitations of original claim 25 and dependent claim 29. Similarly, claim 37 has been amended to include the limitations of original claim 34 and dependent claim 38. Claims 29 and 38 have therefore been canceled. The cited references do not render claims 28 and 37 obvious for reasons stated above in connection with claims 1 and 6. Accordingly, Applicants request withdrawal of this basis for rejecting claims 28 and 37 under 35 U.S.C §103(a).

10. Claims 30-32 are rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Vallee et al and Sklower et al, and further in view of Gewin et al. Claims 30-32 and claim 33 are amended herein to recite a back-to-back configuration such as a repeater that employs twisted pair conductors having high data rates (e.g., 13 Mbps) or loopback processing

as claimed that are not disclosed or suggested by any of the cited patents for reasons stated above on connection with claims 1, 6 and 8.

11. Claims 39-41 are rejected under 35 U.S.C §103(a) as being obvious over Barlev et al in view of Vallee et al and Sklower et al, and further in view of Hiramoto et al and Gewin et al. Accordingly, Applicants request withdrawal of this basis for rejecting claims 39-41 under 35 U.S.C §103(a).

Claims 39-41 are canceled.

Conclusion

In view of the amendments and arguments set forth above, Applicants submit that the present application is in condition for allowance and would appreciate early notification of the same.

Invitation for a telephone interview

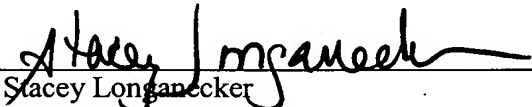
The Examiner is invited to call the undersigned at (202) 659-9076 if further issues remain with allowance of this case.

Deposit Account Authorization

Although no fee is believed due by submission of this paper, authorization is hereby made to charge any fees due or outstanding, or credit any overpayment, to Deposit Account No. **18-2220** (Order No. 45047)

Respectfully Submitted,

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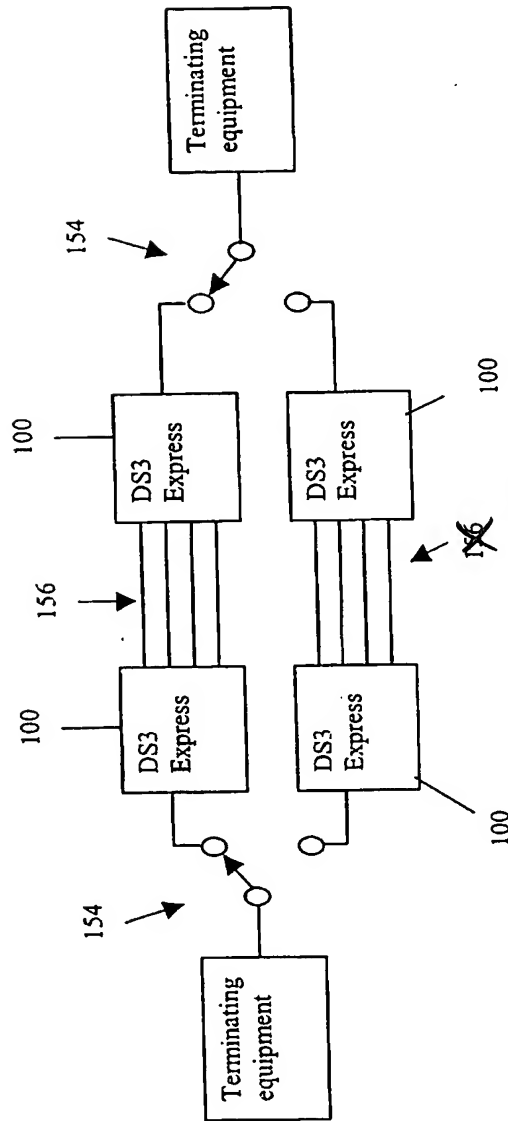


Figure 3

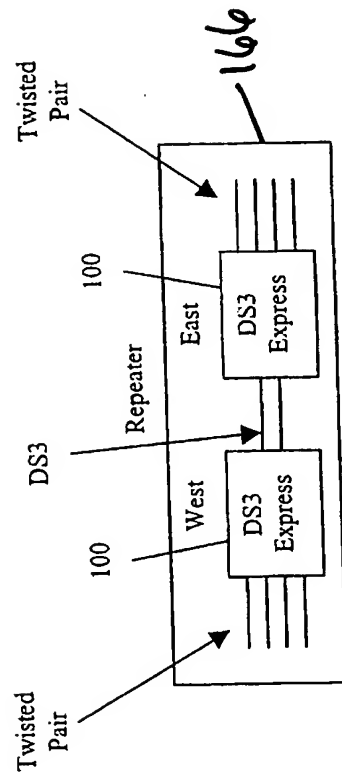


Figure 5a